

To

J. Daming

THE SYDNEY COUNTY COUNCIL

NG 1910

BRANCH STANDING INSTRUCTION
GENERAL

No. 1501

Index No.

Date 22.10.76

BRANCH **METERING SERVICES**

SUBJECT **CURRENT TRANSFORMERS - PROCESSING**

OBJECTIVE To detail responsibilities and procedures related to the processing of current transformers.

MEANS OF ATTAINMENT

1. RESPONSIBILITIES

1.1 Branch Responsibility

- 1.11 The Metering Services Branch is responsible for the acquisition, accuracy, repair and maintenance of current transformers used for metering supply to customers. By arrangement, the Substation Branch provides and installs current transformers used for statistical metering in zone substations and distribution centres and also arranges for the installation of current transformers used for metering customers' supply at those locations.
- 1.12 The Electrical Installation Branch arranges the installation of current transformers for metering supply to customers at all other locations.
- 1.13 The Testing Branch tests C.T.'s on request for ratio and phase angle errors, polarity and correctness of internal connections and terminal markings, and checks for moulding defects.
- 1.14 The Workshops Services Branch generally manufactures metering C.T.'s required by the Council. (Refer Clause 4.1 for C.T.'s bought in switchgear etc.)

1.2 Officers Responsibility

The responsibilities of the officers are:-

- 1.21 The E.M. is generally responsible for all technical matters and for liaison with the C.S.E. for field activities and the Sup.C./M.S. for recording and stores requirements.

- 1.22 The following are duties specifically allocated:-

M.D.O. - Those in B.S.I. 1217 referring in the 25th October, 1973 issue to A. Sup./H.V.M.

F.M.Rep. - Determination of action required on damaged current transformers.

S.C.A.S./M.S. to arrange:-

(a) Maintaining stocks of LV C.T.'s as determined by usage.

(b) Ordering HV C.T.'s. (See Clause 9, B.S.I. 1217)

- (c) Placing I.B.O.s for overhaul and retest.
- (d) Provision of labels and serial numbers allocated from the Contract Register.
- (e) Issue and receipt at:
 - (i) Meter Stores for E.I. LV installations.
 - (ii) Meter Stores for S.E. HV replacements.
 - (iii) E.A.E. for HV metering units.

Cl./M.R. - Recording and issue of test cards required for B.S.I. 350.

2. TYPES

The types of C.T. currently in use are shown in the appendix. (Refer B.S.I. No. 351.) LV C.T.'s other than the types shown, are to be scrapped.

- 2.1 The types S S/WS and SX long range C.T.'s will eliminate the usage of type A C.T.'s on LV installations.

The S/WS type C.T. is a modified version of the S type, the differences being:-

- (a) The opening through which the conductor passes has been enlarged from 32 to 35 mm to accommodate a maximum busbar of $1\frac{1}{4}$ " x $\frac{1}{4}$ " with insulation.
- (b) Mounting brackets have also been redesigned so that the "opening" centre is consistent with the centres of the existing type "A" and "B" current transformers, i.e. from 65 to 86 mm.

2.2 Precautions

Type S, S/WS and SX C.T.'s have secondary current capacity of 10A and they are to be used only with meters of not less than 10A maximum continuous current rating; i.e. M1 2.5/15A, WF35 2.5/10A or 2.5/15A, SD 5ACT or the following demand meters GE 2.5/20, Westinghouse 2.5/20, SD 2.5/15 and L & G 5 or 5/10A meters.

3. ACQUIRING C.T.'s

New C.T.'s are to be acquired from the Workshops Services Branch by placing I.B.O.'s using Job No. 1/28/1-1010.

Used C.T.'s which are suitable for re-use are to be overhauled by the W.S. (I.B.O. on 4/7/4) and then treated as new C.T.'s.

4. TESTING C.T.'s

4.1 Before Issue

All C.T.'s are to be tested by the Testing Branch before delivery to the Metering Services Branch. The Workshops Services Branch arranges these tests which comprise ratio error, phase difference, polarity and correct connections and marking. Permissible errors for C.T.'s manufactured by the W.S. are shown in the appendix. C.T.'s purchased outside the Council are to conform with Class 0.5 to A.S. 1675 - 1974.

4.2 Test Reports**4.21 Test Reports are required for:-**

- (a) HV C.T.'s. The errors of those C.T.'s are included in metering. Types A and B. C.T.'s used for HV are to be specially tested.
- (b) Used LV. C.T.'s rejected because of unsatisfactory errors. This will permit analysis of performance.

4.22 Test Reports are not required to be forwarded to the Metering Services Branch for LV C.T.'s which satisfy the limits shown in the appendix since errors are not included in metering (B.S.I. No. 1002).

4.3 Test Cards

The Testing Branch will attach to each satisfactory LV C.T. (Clause 4.22) a Test Card M.S. 82. Stock line NM.5940, showing the S.C.C. number. The M.D.O. shall arrange the issue of HV Test Cards M.S. 171 at the time of the metering check.

5. FIELD PROCEDURE

C.T. accuracy tests will not be carried out in the field. The various procedures for field work are covered in B.S.I.'s detailed in Clause 6. The E.M. shall determine the requirements for the use of the admittance tester to check performance.

Current Transformers built into Council's HV switchgear, customer's LV cubicles or installed in 33kV metering units, due to their inaccessibility, are to have the secondary connections soldered or crimped to avoid the necessity of checking bolted or screwed connections.

6. RELEVANT INSTRUCTIONS

The following B.S.I.s cover other matters related to current transformers:-

Abbreviated Titles

350	-	Periodic Testing
351	-	Scrapping
1002	-	LV C.T. Metering
1208	-	Colour Code
1217	-	HV Metering

A. Hamilton

PRINCIPAL ENGINEER - METERING SERVICES

AMENDMENT

16th September, 1975

This B.S.I. amends B.S.I. No. 1501, dated 9th January, 1975.

Specifically, it:-

- (a) Introduces the S/WS type long range LV C.T.
- (b) Lists precautions to be observed with long range LV C.T.
- (c) Sets limits for S, S/WS and SX type C.T's.
- (d) Deletes the need for testing type SX C.T's.
- (e) Alters titles and redefines responsibilities.

ISSUE.

Issue to: Code AS,

S.I.O., E.I.S., S.T.S., W.S., Area Eng./Suth.

APPENDIX TO B.S.I. 1501

CURRENT TRANSFORMER DETAILS

ERRORS AT 0.2 OHMS BURDEN, 5.0 AND 0.5 A.

Date: 22.10.76

TYPE			USAGE	DRAWING NO.	PERMISSIBLE ERRORS			REMARKS	
DESIGN	DESCRIPTION	RATIO			RATIO % AT 5 A	PHASE (MINUTES)			
						5 A	0.5 A		
A	Ring - Plastic encased	150, 300, 600/5	Low voltage installations and high voltage metering units.	D.21769B	100.0-100.4 100.0-100.2 100.0± 0	+ 7 + 3 + 1	+25 + 6 + 2	The use of this C.T. will become negligible as use of the long range type S & SX is introduced	
B	Ring - Plastic encased	400, 800, 1200/5	Low voltage installations and high voltage metering units.	D.21769B	100.0-100.2 100.0± 0 100.0± 0	+ 5 + 2 + 1	+12 + 4 + 2		
C	Ring - Plastic encased	1000, 2000, 3000/5	Low voltage installations	D.24562C	100.0-100.2 100.0-100.1 100.0-100.1	+ 4 - 1 - 1	+12 + 2 - 2		
S	E.S.A.A. Ring Plastic Encased	Round Window	400/10 L.Range	Low voltage installations	A2/51981	100.0-100.3	+10	+15	
S/WS				A1/50910	100.0-100.3	+10	+15		
SX		Rect. Window	In service cabinets	D.47195B	100.0-100.3	+10	+15		
11 kV	Wound - Plastic encased	15, 25, 40, 60/5 50, 75, 100, 150/5	All types of 11 kV metering units	D.32323B	As specified and at specified burden			(Actual errors to be allowed for in metering)	
				D.31078B					
33 kV	Window - Plastic	150, 300, 600/5	33 kV metering units	D.32325C					